TIME WARNER

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

June 1, 1994

HAND DELIVERED

William F. Caton, Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Re: Ex Parte Notice
Gen. Docket No. 90-314

Dear Mr. Caton:

In accordance with Section 1.1200 et seq. of the Commission's rules, this is to advise that on Tuesday, May 31, 1994, Dennis Patrick of Time Warner Telecommunications and I met with Commissioner Ness and Greg Vogt of her staff to discuss Time Warner's position in the above-referenced docket. Attached hereto are two copies of written materials provided to the participants in the meeting.

Very truly yours,

Carol Melton

Carol A. Melton

cc: Commissioner Ness
Greg Vogt

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I. The FCC should use the allocation of Personal Communication Services (PCS) spectrum in Docket 90-314 to create **viable competition** to the incumbent cellular duopoly.

- DOJ, GAO and private sector studies have all concluded that cellular behaves like a classic duopoly; that creation of competition by ensuring new PCS entrants will break this duopoly and benefit consumers.
- Strong PCS competitors will lower costs to consumers and stimulate industry growth
- Weak PCS entry will consolidate the celco duopoly and injure consumers
- It is logical that incumbent cellular operations would support positions which minimize viable competition: The FCC, however, should resist these pleas.

II. For PCS service operators to provide viable competition, the Commission must:

A. Assign 40 MHz or more

- A minimum of 40 MHz at 1.8 GHz is necessary to achieve coverage/cost parity with cellular. (1.8 GHz coverage less than ¼ 800 MHz coverage)
- A minimum of 40 MHz is necessary to enable PCS initial deployment pending relocation of incumbent microwave systems.
- Assignment of 40 MHz should be made directly (rather than requiring licensee to aggregate)
  - If assignment too large, FCC can recall channels and reassign, little risk to consumer welfare
  - If assignment too small, increases transaction costs and runs risk promise of PCS may <u>never</u> be realized; winners have incentive to engage in "hostage taking" to prevent aggregation

B. Create no more than two PCS licenses per market at this time

- Ensures rigorous price competition among five competitors (2 celcos, 2 PCS, 1 ESMR)
- Ensures that each competitor can access an adequate customer base relative to the high cost of building a network

- Enables new competitors, particularly designated entities, to obtain financing on reasonable terms -- greater likelihood of survival means a lower cost of capital.

III. Eligibility for and cooperation between licensees

No matter what band plan the FCC chooses to adopt, it must limit in-region cellular eligibility if it hopes to create competition

A. Find Celcos ineligible for PCS spectrum within their service areas (no "cross-ownership")

- Celcos have adequate spectrum with superior cost/coverage characteristics
- Celcos can offer PCS today on their existing spectrum -- GTE Tele-Go is doing so now
- Celcos will acquire any PCS spectrum for which they are eligible, reducing price competition

Specifically, the FCC should prohibit in-region celcos from obtaining additional spectrum. At a maximum, <u>one</u> 10 MHz block should be made available to be bid on by all in-region celcos. Under the FCC's proposed band plan, this would leave one designated entity 10 MHz block and one "unrestricted" 10 MHz block for aggregation with 30 MHz blocks to create two 40 MHz players in each market -- yielding greater competition to cellular.

B. Bar in-region celcos from "affiliating" with PCS service providers, including designated entities on any basis other than customer/supplier ("non-affiliation rule")

- What in-region cellular is barred from doing directly, it should not be able to do indirectly.
- Management contracts, shared use of facilities, financial and other relationships would defeat the intent of the Commission's cross-ownership ban and stifle competition.

Specifically, the Commission should bar in-region celco affiliation with any frequency block for which it is not eligible by adopting the language from 47 C.F.R. §63.54 -- the cable-telco affiliation rule -- which prohibits all financial and business relationships by contract or otherwise, excepting only carrier-user relationships.

C. Multiple License Cooperation

- Permit licensees to aggregate, lease, finance each other,

cooperate in other ways, both on 10 MHz blocks and 30 MHz blocks to reach market equilibrium post-auction

- Limitations
  - In-region cellular should be limited as described above.
  - Two 30 MHz licensees should be able to merge/cooperate. If that group, however, desires to align, merge or affiliate with the third 30 MHz block in a market, application must be made to the FCC and a financial showing of need made.
- Such cooperation and merger between licensees will yield a stable market over time.

AN IN-REGION CELLULAR INCUMBENT WILL ALWAYS VALUE PCS SPECTRUM MORE HIGHLY THAN NEW WIRELESS ENTRANTS - AND CAN THUS OUTBID THE COMPETITION FOR THE LICENSES

(A) The following shows a representative cost structure and value for a PCS license assuming new entrants. Under this scenario, any entrant would bid something less than $5/POP.

	NPV/POP	
Revenue	$100	
Operating expense	$15	
G&A expense	$15	
Marketing expense	$30	
Total expense	$60	
EBITDA & terminal value	$40	
CapEx	$20	
Tax	$15	
Value of PCS	**$5**	← Value per POP for a license

(B) However, an incumbent wireless operation will gain numerous economies in operating a PCS license, because of existing general & administrative staff, existing marketing efforts, and other fixed infrastructure. An incumbent's PCS costs will be lower than those of a start-up, and this raises incumbent bidding ability.

	NPV/POP		
Revenue	$100		
Operating expense	$14	← Decrease cost by	15%
G&A expense	$14	← Decrease cost by	15%
Marketing expense	$26	← Decrease cost by	15%
Total expense	$54		
EBITDA & terminal value	$46		
CapEx	$20		
Tax	$15		
Value of PCS	**$11**	← Value/POP for a licenses	

(C) Further, an incumbent gains the advantage of precluding new competition. If an incumbent gains another license in-region, and thus prevents a competitor from gaining that license, then the incumbent would increase market power (stronger brand presence, more efficient advertising, higher awareness, better distribution, etc.) relative to competitors. Share/revenue would likely be higher.

	NPV/POP		
Revenue	$110	← Increase revenue by	10%
Operating expense	$14		
G&A	$14		
Marketing	$26		
Total expense	$54		
EBITDA & terminal value	$56		
CapEx	$20		
Tax	$15		
Value of PCS	**$21**	← Value/POP for a licenses	

(D) In addition, the result of this would be a more difficult challenge for other new PCS entrants. This would be reflected in their pro forma forecasts (lower share, lower usage, higher costs) and a higher cost of capital. Accordingly, their value of PCS would be lowered by in-region eligibility, and their bids would be forced lower.

(E) Net, a cellular incumbent can outbid new PCS entrants in-region

The above examples demonstrate that:

- A new entrant would bid $5/POP or less
- A cellular incumbent could bid up to $20/POP for the same property
- The relative advantage of cellular incumbents would hold true regardless of specific assumptions. Incumbents will always gain value from (i) blocking competition and (ii) economies of scale

These cost structures and valuations are representative only.

Arthur D Little

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September 9, 1993

Hon. James Quello, Chairman
Federal Communications Commission
1919 M Street, NW
Washington, DC 20554-0002

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Dear Chairman Quello:

Time Warner Telecommunications has asked Arthur D. Little, Inc to prepare an analysis of the financial consequences of introducing 4-5 competitors in each wireless mobile telephony marketplace, as proposed in the emerging technologies notice of proposed rule making (Gen Docket 90-314 adopted July 16, 1992). We have previously filed a letter (dated 8/3/93) which previewed our findings. This letter, and attachments, provides the detailed analysis and support for our prior claims. In short, we find that two additional competitors is the most that a typical major market can support and still allow a reasonable return on investment.

Our analysis considers the overall market demand for a wireless personal communications service in a typical major market under the assumptions that the new PCS will compete with two incumbent 800 MHz cellular carriers, and potentially an ESMR provider as well. We further develop estimates for PCS infrastructure capital investment necessary to support the forecast PCS demand. We have assumed a particular infrastructure architecture that is consistent with market demands and the state of the art technology.

Our analysis results are summarized in the following table:

Table 1
Summary of PCS Models

# Cellular Operators	# PCS Operators	Market Share Percent (1)	Rate of Return Percent (2)
2	2	12.5-25%	13.5%
2	3	10-20%	6.8%
2	4	8.5-17%	1.4%
2	5	7-14%	-6.1%

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(1) The market share range is the expected market share that the PCS operator under study would likely gain over the ten year study window. The larger number in the range is based upon the conservative assumption that the PCS and cellular operator would each have equal share by the end of the ten year period. For example, in case 1: 2 Cellular + 2 PCS operators; the long term market share is shown as 25%. The smaller number in the range is the initial market share in the early years of the roll-out of PCS. This is based on the cellular head-start and brand name awareness.

(2) The rate of return number is the internal rate of return computed by our model under the assumptions to be further detailed below. The rate of return computation includes consideration of annual income, annual investment, and terminal value at the end of the ten year study window (all analysis is pre-tax based on 1993 dollars).

These results demonstrate that 2 PCS competitors, in addition to the two incumbent cellular carriers, is all that a typical major market can support while still allowing a reasonable return on the substantial capital investment necessary to implement the networks. By reasonable return, it is important to note that we mean a weighted average cost of capital typical of a going concern, and not a higher, more speculative *venture capital return.*

The reason for this conclusion is grounded, in part, on the assumption that a higher proportion of a PCS network's infrastructure cost will be fixed, related primarily to the size of the geographic region to be served, than is the case with cellular networks which enjoy a significant percentage of infrastructure cost that is variable with respect to the number of subscribers. This difference, which can be partially mitigated by employing wider bandwidths, is due to two factors 1) the greater coverage possible at the lower frequencies assigned to cellular, and 2) consumer research for PCS that indicates a need for longer battery life and low power handsets. Thus, newly constructed 800 MHz cellular systems can achieve ubiquitous coverage with a minimum of fixed costs by employing large cell sizes. As subscribership grow, cellular systems can expand capacity incrementally by adding channels and "splitting" cells thereby deferring investment until it can be justified by subscriber demand.

On the other hand, to achieve a similar degree of ubiquitous coverage, PCS must deploy a larger number of cells. Although with additional bandwidth and the use of wideband cable transport, some of this infrastructure cost can be made variable, a sizeable percentage of PCS capital costs will be fixed. Because this investment cost for each operator primarily is a function of the size of the region to be covered, and not the number of subscribers served, each new competitor in the marketplace reduces the system operator's ability to amortize the high fixed investment cost.

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The detailed models which lead to the Table 1 Summary are attached as exhibits. These four exhibits are designated Case 1 through 4, and correspond to the four ranges of market share shown in the Table 1 Summary above. The model is based upon Chicago as a typical large urban market. The service area was further divided into two categories: 1) A 240 square mile, high density city portion with a population of 1070 thousand households and 2) A 1744 square miles remainder of the PMSA with a low population density given by 1164 thousand households. The four model cases vary only with respect to the share of the market.

Each model has five major sections:

1) **Revenue**- based on primary market research conducted by ADL

2) **Operating Expense**- assumptions based upon several sources, as further detailed below. The sources include: the cellular industry ratios for operating and GS&A (including marketing) expense as well as local exchange carrier rates for voice circuit intra-LATA transport.

3) **Profit**- the operating profit given by the Revenue-Expense

4) **Investment**- the required RF investment at cell sites plus the cost for switching as well as the expected auction cost for spectrum. The architecture and cell structure was selected to meet the market needs as well as be consistent with state of the art technology and assumptions regarding the regulatory framework to be developed by The Commission. The auction cost for spectrum is based upon the $10b estimate of Congress and our estimate of a 60 million total PCS subscriber market resulting in an auction cost of $167/subscriber. Other assumptions leading to the investments are further detailed in the following.

5) **Analysis**- The analysis section covers a ten year window and applies the operating profit to the investment to compute a discounted cash flow (DCF). A weighted cost of capital of 12% was used to compute present values. This is an extremely conservative number and companies participating in PCS development will have much higher costs of capital. Due to the lack of technology maturity a re-investment of 50% of the total capital is assumed for year five. At the end of the 10 year analysis window a terminal value is assumed based upon 11X the adjusted terminal year cash flow. The discounted terminal value is added to the DCF value in year ten to provide a total present value of the business after ten years. Finally an internal rate of return (IRR) is computed on the present value

of the business after ten years. This IRR is used as the overall measure of financial attractiveness and could be further adjusted downward to account for risks, costs of moving incumbent microwave users, and expected transaction costs above the assumed $167/subscriber for acquisition of license rights.

Detailed assumptions regarding the revenue section include:

- The monthly fee is assumed as $35/month net of all fixed and measured service. This fee is based on ADL primary market research that indicates such a fee would maximize revenue.

- Demand based upon an ultimate penetration of 61% of service area households paced by an *S* shaped adoption curve that is roughly 40% of the 61% ultimate after 10 years (i.e., roughly 24.4% in the tenth year.) This adoption curve is roughly comparable to historical cellular rate of adoption but with a much higher ultimate penetration.

- The churn of 30%/year is based on current cellular experience and greatly impacts the marketing cost

- The market share is assumed to start at 1/2 that of cellular (due to cellular head start) and trend to an equal share based on the total number of cellular and PCS operators

Detailed assumptions regarding the expense section include:

- The operating expense and G&A is based upon applying ratios from today's cellular operations

- The transport cost is based upon leased transport costs from intra-LATA local exchange carriers. An average rate of $500/month per cell site was used as typical for metro area DS1 leased transport.

- The marketing costs are based upon the churn and an assumption that marketing costs 50% of the first years revenue for new subscribers as is the case with cellular today. But since PCS monthly fees are roughly 1/2 that of cellular, the marketing costs are also 1/2 that of cellular. This is also a conservative assumption, as a new entrant might be expected to have marketing expenses greater than the incumbents to facilitate trial and penetration.

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The detailed assumptions leading to the investment follow:

- We assumed that the architecture and cell structure will be based on tradeoffs between market needs, technology state of the art, and cost of infrastructure. The market needs are: low cost subscriber handsets, wireline voice quality, and long battery life. This leads to assumptions of 4 voice circuits/RF channel, 1/2 mile maximum initial cell radius, and 300 KHz TDMA channel spacing. The cost per RF channel was assumed as $15,000 plus a fixed cost per site of $2,500. These costs are based on ADL estimates scaled from today's 800 MHz cellular systems.

- While the initial 1/2 mile radius cell sizes are too large to meet the market demands, it is too costly to start with smaller cell sizes, especially outside the dense city populated area. We therefore start with 1/2 mile cell sizes but split to 1/4 mile cells in the city during year 4 to accommodate the growth in traffic.

- The traffic assumed was 0.06 Erlangs/subscriber during the busy hour. This offered traffic is roughly twice that of today's cellular based upon the lower cost and consumer nature of the service.

- The costs for switching were assumed to be the same as today's cellular costs and are scaled to the number of subscribers.

- The auction cost for spectrum is assumed to be $167/subscriber based upon the desire to raise $10b.

Our analysis clearly suggests that PCS is a business that has high fixed costs and that this fact sets a limit on total number of viable competitors per market. We believe that the public interest is best served by a regulatory framework which minimizes the delay in the licensing and implementation of new personal communications services. We further believe that the proposed 4-5 operators in a major market will not allow any operator to realize a fair return on investment, will impose unnecessary transaction costs, and will therefore act to delay the implementation of services and their ultimate long term ability to survive. Based upon our economic analysis, we therefore respectfully suggest that final rules limit the competitors to no more than two new licensees in each major market.

In performing this analysis, we have drawn upon our extensive prior work in the field of public mobile telecommunications. Our firm has been active in this field since the late 50's and the staff which supported this study each have on the average of thirty

years experience directed toward the study of telecommunications systems and land mobile radio in particular. Over the last 3 years, we have performed several dozen PCS assignments for existing and potential carriers, equipment manufacturers, and industry associations. Most recently we completed a detailed study of PCS infrastructure cost as a function of subscriber demand. This PCS study developed an economic model to assess the financial attractiveness of alternative PCS opportunities.

Should the 4-5 competitor regulatory framework proposed in the cited tentative decision be made final, we believe that in addition to delays in offering service there are a number of possible unfavorable implications, including: (i) Lower bids in auction, as bidders reason that licenses are worth less and hold capital in reserve for aggregation transactions, (ii) Fewer bids in auction, as entities with demands on limited capital will chose more favorable investment opportunities, and (iii) Significant transaction costs as the market consolidates the weak licensees.

Very truly yours,

Stuart J. Lipoff

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Attachments